

The role of emotional functioning in military-related PTSD and its treatment

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Abstract

This two-part study investigated the cross-sectional and across-treatment relationships among measures of emotional functioning and posttraumatic stress disorder (PTSD) symptomatology for veterans receiving specialized treatment for military-related PTSD. Cross-sectional analyses revealed overlap among emotion regulation, affective control, depressive symptoms, and PTSD symptoms at pre-treatment. In regression analyses, fear of losing affective control was most predictive of PTSD symptoms. Bivariate analyses of residualized change scores showed that changes in emotion regulation and fear of losing affective control were associated with changes in PTSD and depressive symptoms across treatment. Regression analyses revealed that changes in fear of losing affective control most strongly predicted changes in PTSD and depressive symptoms. Theoretical and clinical implications are discussed, including an understanding of the differences between emotion regulation and affective control processes. Future research directions are offered, including improved measurement of emotional functioning and longitudinal research delineating the likely bi-directional relationship between emotional functioning and PTSD. © 2005 Elsevier Inc. All rights reserved.

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Although there is a lengthy tradition of studying various types of negative emotions associated with posttraumatic stress disorder (PTSD), theory and research on the emotional processes involved in PTSD have lagged behind (e.g., Litz & Gray, 2002). In particular, the role of emotion regulation in the development and maintenance of PTSD, as well as PTSD treatment, is not well understood. Contributing to this dearth of understanding is that though emotion regulation and affective control are often discussed, they tend to be imprecisely defined. The overall aim of this study was to examine emotional deficits associated with PTSD by investigating the cross-sectional relationships among PTSD symptoms, emotion states, and the emotional processes of affective control and emotion regulation. The role of these emotional deficits in PTSD treatment outcomes was also investigated.

There are well-established relationships between PTSD and a range of negative affective states, leading several authors to argue that PTSD involves disturbance not only in anxiety, but in a variety of emotions (e.g., Chemtob, Novaco, Hamada, & Gross, 1997; Kubany & Watson, 2002; Resick, 2001). In addition to the relationship with other negative affective states, emotion and information processing theories of PTSD (e.g., Foa & Kozak, 1986; Horowitz, 1986; Litz, 1992; McNally, Kaspi, Riemann, & Zeitlan, 1991) describe various emotional processes associated with trauma memory encoding, storage, and retrieval. Emotional regulation deficits are one type of emotional process problems implicated in PTSD. Emotion regulation consists of two components. The first component is one's ability to tolerate strong emotions, both positive and negative, without feeling overwhelmed. The second component is one's ability to modulate the experience of various emotional states (Briere, 1997; Herman, 1992). In other words, emotion regulation is the ability to assert some degree of control over one's emotions, such that one can experience a sense of stability and can easily transition between emotional states. Consistent with the notion that PTSD involves a deficit in the ability to manage strong emotions, various studies have shown a relationship between PTSD and emotion regulation (Pelcovitz et al., 1997; van der Kolk, Roth, & Pelcovitz, 1993). The PTSD field trials for the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV) revealed that over 70% of respondents, regardless of trauma type, endorsed symptoms of emotion dysregulation (e.g., getting upset easily; van der Kolk et al., 1993).

In spite of the frequent discussion of the emotion regulation construct in the literature, few assessment measures have been developed to operationally define it. Structured interview assessment of emotion dysregulation, such as the Regulation of Affect and Impulses subscale of the Structured Interview for Disorders of Extreme Stress (SIDES; Pelcovitz et al., 1997), has been positively associated with PTSD in both treatment seeking and nontreatment seeking combat and civilian traumatized samples (Newman, Orsillo, Herman, Niles, & Litz, 1995; van der Kolk et al., 1996; Zlotnick, Mattia, & Zimmerman, 2001). The general expectancy for Negative Mood Regulation Scale (NMR; Catanzaro &

Mearns, 1990) has been investigated in college populations and has shown an association with depressive symptoms (Catanzaro, 1997). However, the NMR does not include all aspects of mood regulation, but instead focuses primarily on the regulation of depressive symptoms. It also has limited validation in clinical populations (Cloitre, Koenen, Cohen, & Han, 2002). The Regulation of Emotional Distress Scale (REDS; Larson, 1994) examines a broader range of emotions, but its psychometric properties have been only minimally explored (Rodriguez, Monson, & Price, 2004).

The emotion regulation construct has been directly implicated in several theories of PTSD and its treatment. For example, Cloitre et al. (2002) developed a staged treatment model for PTSD related to childhood sexual abuse in which the first stage of treatment targets emotion dysregulation. They found that improvement in emotion regulation abilities, as measured by the NMR (Catanzaro & Mearns, 1990), predicted the success of exposure-based treatment in improving PTSD symptoms in their sample. However, the role of changes in emotion regulation across PTSD treatments not specifically designed to target these symptoms is unclear.

An associated, but potentially unique, construct involved in emotional processing is the fear of losing affective control. The affective control construct was originally developed in the context of panic disorder (Williams, Chambless, & Ahrens, 1997), and is an expansion of the cognitive construct of anxiety sensitivity. Anxiety sensitivity is fear of the consequences of anxiety and loss of control related to anxiety (Reiss, Peterson, Gursky, & McNally, 1986). Affective control expands this concept to beliefs about the harmful consequences of losing control over other emotions. Moreover, affective control is a cognitive construct referring to fear of the negative consequences of strong emotions, positive and negative, as well as the fear that one will not be able to control their emotions or how they respond to them (Williams et al., 1997). A hallmark aspect of the presentation of PTSD is concern about feeling out of control of one's emotions, usually in relation to trauma reminders or recollections. Thus, the cognitive construct of affective control may be related to, but is different from the behavioral construct of emotion regulation, which emphasizes the ability to tolerate, modulate, and control emotional reactions.

To our knowledge, the role of beliefs about affective control in PTSD samples has not specifically been investigated. However, existing research with other populations is relevant. For example, Yen, Zlotnick, and Costello (2002) investigated affective control in a sample of women with borderline personality disorder (BPD) using the Affective Control Scale along with a companion measure of the strength of one's affective experiences, the Affect Intensity Measure (Larsen, 1984). They found that both constructs were associated with the disorder. Interestingly, these authors conceptualized the constructs of affective control and affect intensity as components of the larger construct of affect (emotion) regulation. This conceptualization raises important issues about the operational definitions of these constructs as well as their roles in mental illness.

Although research clearly suggests that PTSD is related to deficits in emotional functioning, studies are just beginning to explicate the relationships among these constructs. In addition, the role of emotion regulation and fear of losing affective control in PTSD treatment outcomes is largely undetermined. Thus, the current study had a two-fold purpose. The first goal was to investigate the cross-sectional relationships amongst measures of emotion regulation, affective control, depressive symptoms, anxiety symptoms, and PTSD symptoms within a sample of veterans with military-related trauma. Based on previous research, it was hypothesized that the emotional functioning variables would be highly correlated with symptoms at pre-treatment. The second goal was to examine how changes in these emotional functioning variables are associated with symptom outcomes across treatment. A direct relationship between these changes was hypothesized.

1. Method

1.1. Participants

A total of 81 male participants diagnosed with military-related PTSD completed the assessment materials prior and subsequent to their participation in a specialized Department of Veterans Affairs Medical Center intensive day treatment program for PTSD. Their mean age was 52.83 years (S.D. = 6.17), and they were predominantly Caucasian (89%; 9% African-American; 1% American Indian/Alaskan; 1% missing data). About equal proportions of the participants were married (35%) or divorced (31%), while the remaining participants were remarried (11%), separated (6%) or never married (17%). Eighty-six percent of the sample reported that they were currently unemployed. Approximately 14% had less than a high school degree, 61% had a high school degree or its equivalent, and 11% had completed a bachelor's degree.

Approximately 88% of the veterans reported serving in Vietnam, and nearly 89% of the participants endorsed having engaged in combat. Over half (59%) of the sample received service-connected disability entitlements for PTSD. These characteristics are consistent with those found in the larger population of veterans seeking specialized VAMC PTSD services (Rosenheck & Fontana, 2002).

1.2. Measures

PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL is a commonly used, 17-item self-report measure of PTSD symptoms. The items parallel the PTSD symptoms found in the DSM-IV (American Psychiatric Association, 1994), and are rated on 5-point Likert-type scales indicating severity of symptoms. The psychometric properties of the PCL have been well established

(Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Forbes, Creamer, & Biddle, 2001; Weathers & Ford, 1996). In this study, total and symptom cluster subscale scores were used.

Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979). The BDI is a 21-item self-report measure designed to assess the degree of depressive symptomatology. A meta-analysis addressing the psychometric properties of the BDI demonstrated high internal consistency in psychiatric and nonpsychiatric populations, with a mean coefficient $\alpha = .87$. The BDI's test–retest reliability was also high, with correlations greater than .60. Concurrent validity with other measures of depression was also shown to be strong, as was the BDI's construct validity (Beck, Steer, & Garbin, 1988).

State-Trait Anxiety Inventory (STAI; Spielberger, 1983). The STAI is a 40-item self-report measure designed to assess current, or state, levels of anxiety as well as more general, or trait, levels of anxiety. For the purpose of the current study, only state anxiety was included as an outcome measure. Chaplin (1984) reported that test–retest reliability for the STAI-S ranged from .16 to .42, and internal consistency ranged from .86 to .95.

Regulation of Emotional Distress Scale (REDS; Larson, 1994). The REDS is a 30-item self-report measure of the ability to adaptively regulate emotions. Each question is rated on a 5-point, Likert-type scale. Three specific regulation skills are measured, including: (1) focus on emotional processing (e.g., “When upset, I like to explore and understand what I am feeling”); (2) recognition that distress is temporary (e.g., “Sometimes my emotional pain may feel bottomless, but I usually know it will go away”); and (3) recognition that distress provides useful information (e.g., “My painful feelings do not serve a purpose”). The scale was originally developed and tested as part of a study of 170 Navy wives undergoing the stress of lengthy marital separation due to their husbands' deployment. Results from this study suggested that the REDS is unidimensional (item remainder coefficients all $> .20$) and that it has adequate internal consistency ($\alpha = .77$) and test–retest reliability ($r = .63$) within this population. Preliminary convergent validity of the scale was established via moderately strong correlations with psychological well-being, use of engaged coping strategies, and less negative affectivity (Larson, 1994). Low correlations with emotional restraint, self-presentation style, and use of emotional discharge as a coping strategy showed adequate discriminant validity (Larson, 1994).

Affective Control Scale (ACS; Williams et al., 1997). The ACS is a 42-item self-report scale designed to measure fear of experiencing emotion and losing control over internal and behavioral reactions to one's emotions. Each question is rated on a 7-point, Likert-type scale. The four subscales of the ACS measure the fear of and desire to control expressions of anger, depression, anxiety, and positive emotions, respectively. Williams et al. (1997) tested the ACS in an undergraduate sample ($N = 75$) and reported excellent internal consistency for the overall scale ($\alpha = .94$) and subscales ($\alpha = .72-.91$) and good 2-week-test–retest reliability for the overall scale ($r = .78$) and subscales ($r = .66-.77$). The ACS has also shown

strong convergent validity in its strong association with the Emotional Control Questionnaire (Rapee, Craske, & Barlow, 1989; Williams et al., 1997) as well as with the Neuroticism subscale of the Eysenck Personality Questionnaire (Berg, Shapiro, Chambless, & Ahrens, 1998; Eysenck & Eysenck, 1975). The ACS has demonstrated discriminant validity via low correlations with social desirability and psychoticism (Berg et al., 1998; Williams et al., 1997).

1.3. Procedures and design

All participants completed a three-week, specialized, intensive PTSD Day Hospital Program at a VA Medical Center. They spent their nights in a hospital-based “lodge” that does not include nursing care. The cognitive-behavioral, skills-focused treatment program was aimed at developing skills to better manage and cope with PTSD and frequently co-occurring conditions. The participants simultaneously received a core of psychoeducational groups focused on understanding PTSD symptoms, substance abuse, therapeutic recreation, spirituality, and leisure education. The participants also participated in treatment groups focused on anxiety management, stress management, anger management, and interpersonal skills. CBT interventions delivered in these groups included breathing retraining, progressive relaxation, cognitive restructuring, assertiveness skills, listening/paraphrasing skills, and taking “time-outs” to manage anger. Homework was assigned for participants to complete outside of the treatment sessions (e.g., thought logs, listening to relaxation tapes, practicing specific interpersonal skills).

Each group was 60 to 90 minutes in duration, with approximately 35 hours of programming per week. The groups were here-and-now focused, aimed at skill development and gaining knowledge in each area. Participants were redirected away from re-telling or sharing specific details of their traumatic experiences. Individual psychotherapy sessions were not a part of the treatment program; however, brief crisis-oriented sessions were occasionally necessary.

All treatment was provided during a 1-year period, and was facilitated by the same treatment staff consisting of two doctoral-level psychologists, one master’s-level psychologist, one substance abuse counselor, one psychiatrist, one chaplain, and one recreation therapist.¹

1.4. Data analyses

Of the 81 veterans participating in the treatment, 7 were eliminated from the cross-sectional analyses due to missing pre-treatment data. Thus, 74 veterans were included in the cross-sectional analyses. For the across treatment sample, 16 additional veterans did not complete the post-treatment assessment, leaving 58 veterans who completed the measures at pre- and post-treatment. A subset of this

¹ Further treatment group descriptions and program schedule are available from the second author.

overall sample completed the ACS due to a later introduction of the measure into the assessment protocol. Thus, 40 veterans completed the ACS at pre-treatment, and 31 had both pre- and post-treatment measurement.

Correlational analyses were used to determine the cross-sectional relationships among the emotional functioning variables and PTSD symptoms. To address the relative independence and importance of the emotion process measures, a series of multiple regressions was conducted, with emotion regulation and affective control simultaneously entered into the equations to predict total PTSD, PTSD symptom clusters, depressive symptoms, and state anxiety. To examine the relationships among changes in emotion regulation, affective control, depressive symptoms, state anxiety, and PTSD symptoms across treatment, residualized change scores were calculated. Residual change scores were used instead of simple change scores in order to take into account the variable's pre-treatment level and its potential for regression to the mean. Correlational and a second series of linear regression analyses of these residual change scores were then conducted to evaluate the role of the emotion regulation and affective control in treatment outcomes (i.e., PTSD, depression, state anxiety).

2. Results

2.1. Cross-sectional relationships

Correlational analyses revealed significant overlap between depressive symptoms and state anxiety ($r = .26$, $P < .05$) as well as depressive symptoms and total PTSD symptoms ($r = .47$, $P < .05$). Depressive symptoms were

Table 1
Bivariate relationships between the emotion variables and PTSD symptomatology at pre-treatment

	REDS ^a	ACS-Tot ^b	ACS-Ang ^b	ACS-Dep ^b	ACS-Anx ^b	ACS-Pos ^b
PCL-Total	-.14	.38*	.25	.31	.24	.26
PCL-Rex	.05	.32*	.02	.27	.19	.30
PCL-A/N	-.25*	.23	.22	.20	.09	.19
PCL-Hyp	-.06	.33*	.33*	.23	.28	.11
BDI	-.08	.28	-.05	.21	.18	.32*
STAI-State	-.11	.12	-.19	.31	.14	.03

Note. * $P < .05$ and ** $P < .01$. REDS: Regulation of Emotional Distress Scale; ACS-Tot: Affective Control Scale, Total Score; ACS-Ang: Affective Control Scale, Anger Subscale; ACS-Dep: Affective Control Scale, Depression Subscale; ACS-Anx: Affective Control Scale, Anxiety Subscale; ACS-Pos: Affective Control Scale, Positive Emotions Subscale; PCL-Total: PTSD Checklist Total Score; PCL-Rex: PTSD Checklist Reexperiencing Subscale; PCL-A/N: PTSD Checklist Avoidance/Numbing Subscale; PCL-Hyp: PTSD Checklist Hyperarousal Subscale; BDI: Beck Depression Inventory; STAI-State: State-Trait Anxiety Inventory, State Subscale.

^a $n = 74$.

^b $n = 40$.

significantly correlated with all PTSD symptom clusters as well, including re-experiencing ($r = .50$, $P < .05$), avoidance/numbing ($r = .25$, $P < .05$), and hyperarousal ($r = .34$, $P < .05$). However, as shown in Table 1, emotion regulation and fear of losing affective control were not consistently associated with depressive symptoms and state anxiety, nor each other ($r = .06$, $P = .71$). In addition, though fear of losing affective control was highly correlated with total PTSD, re-experiencing, and hyperarousal symptoms, emotion regulation was only associated with avoidance/numbing symptoms.

In the regression analyses of pre-treatment data, fear of losing affective control emerged as a significant predictor of total PTSD, re-experiencing symptoms, and

Table 2
Emotional variables' associations at pre-treatment and with treatment outcomes

	Pre-treatment			Residual change		
	<i>B</i> (S.E. <i>B</i>)	β	<i>t</i>	<i>B</i> (S.E. <i>B</i>)	β	<i>t</i>
<i>PCL-Total</i> ^a						
ACS-Tot	4.48 (1.79)	.38	2.50*	7.50 (1.04)	.56	3.49**
REDS	-.001 (.16)	-.001	-.01	-.03 (.13)	-.04	-.22
<i>PCL-Rex</i> ^b						
ACS-Tot	1.62 (.79)	.32	2.05*	3.03 (.80)	.57	3.81**
REDS	-.01 (.07)	-.01	-.07	-.05 (.05)	-.15	-.991
<i>PCL-A/N</i> ^c						
ACS-Tot	1.24 (.85)	.23	1.46	2.63 (1.25)	.38	2.11*
REDS	-.02 (.08)	-.03	-.21	-.02 (.08)	-.04	-.24
<i>PCL-Hyp</i> ^d						
ACS-Tot	1.62 (.78)	.32	2.08*	1.86 (.98)	.35	1.91
REDS	.02 (.07)	.04	.28	-.003 (.06)	-.01	-.05
<i>BDI</i> ^e						
ACS-Tot	3.68 (2.09)	.27	1.76	8.49 (2.21)	.60	3.84**
REDS	.35 (.18)	.29	1.89	-.04 (.14)	-.05	-.29
<i>STAI-State</i> ^f						
ACS-Tot	2.06 (2.63)	.13	.78	1.74 (4.98)	.08	.35
REDS	-.15 (.23)	-.11	-.66	.09 (.31)	.06	.30

Note. REDS: Regulation of Emotional Distress Scale; ACS-Tot: Affective Control Scale, Total Score; PCL-Total: PTSD Checklist Total Score; PCL-Rex: PTSD Checklist Reexperiencing Subscale, PCL-A/N = PTSD Checklist Avoidance/Numbing Subscale, PCL-Hyp = PTSD Checklist Hyperarousal Subscale, BDI = Beck Depression Inventory, STAI-State = State-Trait Anxiety Inventory, State Subscale.

^a Pre-tx $F(2, 37) = 3.13$, Adj. $R^2 = .10$; Residual $F(2, 31) = 7.73^{**}$, Adj. $R^2 = .29$.

^b Pre-tx $F(2, 37) = 2.10$, Adj. $R^2 = .05$; Residual $F(2, 31) = 11.19^{**}$, Adj. $R^2 = .38$.

^c Pre-tx $F(2, 37) = 1.07$, Adj. $R^2 = .003$; Residual $F(2, 31) = 2.97$, Adj. $R^2 = .11$.

^d Pre-tx $F(2, 37) = 2.24$, Adj. $R^2 = .06$; Residual $F(2, 31) = 2.23$, Adj. $R^2 = .07$.

^e Pre-tx $F(2, 37) = 3.56^*$, Adj. $R^2 = .12$; Residual $F(2, 31) = 9.49^{**}$, Adj. $R^2 = .34$.

^f Pre-tx $F(2, 37) = .50$, Adj. $R^2 = -.03$; Residual $F(2, 28) = .07$, Adj. $R^2 = -.07$.

* $P < .05$.

** $P < .01$.

hyperarousal symptoms, but did not predict depressive or anxiety symptoms (see Table 2). Emotion regulation did not emerge as a significant predictor of PTSD, depressive, or anxiety symptoms.

2.2. Treatment outcomes

As shown in Table 3, changes in emotion regulation were directly associated with changes in total PTSD, re-experiencing, and avoidance/numbing symptoms. Changes in fear of losing affective control were positively correlated with changes in total PTSD and re-experiencing symptoms. Most of the residual change scores for the ACS subscales and PTSD symptom clusters were highly correlated in the expected direction. However, there were no significant relationships between changes in fear of losing control of positive emotions and PTSD symptomatology. Changes in both emotion regulation and fear of losing affective control were also associated with decreases in depressive symptoms, but not state anxiety.

Regression analyses revealed that changes in fear of losing affective control most strongly predicted changes in total PTSD symptoms, re-experiencing, and avoidance/numbing across treatment (see Table 2). Changes in affective control also predicted changes in depressive symptoms. However, neither affective control nor emotion regulation residual change scores predicted changes in hyperarousal or state anxiety. Changes in emotion regulation were not predictive of a change in any of the outcomes.

Table 3

Bivariate relationships between residual change scores of the emotion variables and treatment outcomes

	REDS ^a	ACS-Tot ^b	ACS-Ang ^b	ACS-Dep ^b	ACS-Anx ^b	ACS-Pos ^b
PCL-Total	-.27*	.47**	.48**	.35*	.51**	.15
PCL-Rex	-.27*	.54**	.45*	.44*	.51**	.22
PCL-A/N	-.26*	.32	.42*	.26	.37*	.01
PCL-Hyp	-.20	.24	.19	.06	.33	.10
BDI	-.37**	.58**	.48**	.38*	.58**	.29
STAI-State	.003	.04	-.04	.16	.05	-.004

Note. REDS: Regulation of Emotional Distress Scale; ACS-Tot: Affective Control Scale, Total Score; ACS-Ang: Affective Control Scale, Anger Subscale; ACS-Dep: Affective Control Scale, Depression Subscale; ACS-Anx: Affective Control Scale, Anxiety Subscale; ACS-Pos: Affective Control Scale, Positive Emotions Subscale; PCL-Total: PTSD Checklist Total Score; PCL-Rex: PTSD Checklist Reexperiencing Subscale; PCL-A/N: PTSD Checklist Avoidance/Numbing Subscale; PCL-Hyp: PTSD Checklist Hyperarousal Subscale; BDI: Beck Depression Inventory; STAI-State: State-Trait Anxiety Inventory, State Subscale.

^a $n = 58$.

^b $n = 31$.

* $P < .05$.

** $P < .01$.

3. Discussion

This study investigated the relationships among PTSD, depressive symptoms, state anxiety, emotion regulation, and affective control, both cross-sectionally and across PTSD treatment. The initial step of examining the bivariate relationships among the variables revealed substantial overlap between symptoms of depression and anxiety as well as between symptoms of depression and PTSD. Overlap among these variables is not surprising given the similarity in people's reporting of their experiences of negative mood states (e.g., Clark, Steer, & Beck, 1994; Mineka, Watson, & Clark, 1998). However, the nonsignificant relationship between emotion regulation ability and fear of losing affective control is an important finding, given the assumed association between these variables in the literature (e.g., Yen et al., 2002).

It appears that emotion regulation ability, as measured by the REDS (i.e., deficits in skills related to emotional processing, recognition of distress as temporary, and the awareness of the usefulness of emotions), is a separate construct from the fear of losing control over internal and behavioral responses to affect and the desire to maintain control over emotional expression as measured by the ACS. Given the independence of these constructs, their associations with symptoms is particularly important in explicating the different emotional processes at play in PTSD.

Cross-sectionally, emotion regulation was associated with avoidance/numbing symptoms only, and fear of losing affective control was associated with total PTSD and all symptom clusters *except* avoidance/numbing. When both fear of losing affective control and emotion regulation were taken into account in the regression analyses, fear of losing affective control emerged as the stronger predictor of PTSD symptoms. However, neither measure was associated with avoidance/numbing.

These findings have a number of interesting theoretical and clinical implications. First, they provide further evidence that affective control and emotion regulation are distinct emotional process constructs. The differential pattern of associations with PTSD symptom clusters suggests that affective control may relate more to efforts to suppress or minimize emotional experiences because of fear of losing control. Therefore, fear of losing affective control would more likely be associated with re-experiencing and hyperarousal symptoms. Emotion regulation, on the other hand, seems related to efforts to regulate already experienced emotions. In the case of PTSD, behavioral avoidance and emotional numbing might be considered efforts to manage trauma-related distress and arousal. The failure of emotion regulation to emerge as a predictor could also be related to the limitations of the REDS as a measure, given previous evidence for the strong relationship between PTSD symptoms and this construct (e.g., Zlotnick, Mattia, & Zimmerman, 2001). Regardless of the conceptual issues surrounding these constructs, the data suggest that fear about experiencing strong emotions and a related concern

about controlling emotional reactions may impact successful implementation of PTSD treatment.

Another important finding concerns the role beliefs about losing affective control play in changes in depressive symptoms, but not state anxiety symptoms. This pattern of relationships has important implications for treatment outcome in terms of which types of emotional processing strategies are important for symptom improvement. The fact that changes in emotion regulation did play a role here in spite of its nonsignificant association at pre-treatment is intriguing. Perhaps as fears about losing affective control changed, patients were better able to regulate their emotions, and thus, PTSD symptoms changed as well. Consistent with Cloitre et al. (2002), it appears that interventions geared toward improving affect management may be useful adjunctive or independent treatments for military-related PTSD.

Various treatments specifically targeting affective disturbances in PTSD have resulted in improvements in PTSD symptoms (Cloitre et al., 2002; Foa et al., 1999; Zlotnick et al., 1997). Emotion Focused Therapy has been indicated for the treatment of alexithymia (a related construct involving emotional functioning) and there is some preliminary data supporting its efficacy for treating PTSD (Hyer, Woods, & Boudewyns, 1991; Paivio & Nieuwenhuis, 2001). Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999), with the goals of addressing experiential avoidance, which may be related to emotion regulation and fear of losing affective control, could also facilitate PTSD treatment. Certainly, longitudinal research to further delineate relationships among the emotional functioning variables and treatment outcomes is in order.

The limitations of the current study, including sample characteristics and design, must be considered. The sample consisted predominantly of Caucasian Vietnam veterans with chronic PTSD; thus, future studies with broader sample characteristics are necessary to determine generalization of the findings. Several measurement limitations are also important to note, including the exclusive use of self-report emotion measures. A respondent identified as having emotional disturbances or a chronic condition such as PTSD may have inherent problems in responding to questions about their emotions or symptoms. Clinician interviews like the Clinician Administered PTSD Scale (CAPS; Blake et al., 1990) and/or collateral reports from spouses and significant others would shed additional light on these issues. As indicated previously, another measurement limitation involves the use of the REDS, given its minimal validation in other samples (Rodriguez et al., 2004). This measure was chosen because there are surprisingly few self-report measures of emotion regulation, which perhaps reflects the difficulty in operationalizing this construct. Thus, future studies should focus on enhancing measurement of these constructs and further exploring their relationships with PTSD and treatment outcome.

Results of the treatment outcome analysis are also limited by the uncontrolled nature of the study. Longitudinal research, with random assignment, could examine the likely bi-directional relationship between emotional functioning and

PTSD. Likewise, research with larger samples using more sophisticated data analytic procedures such as causal modeling, would address the generalizability of the current findings and further delineate emotional deficits specific to PTSD. Research with larger samples would also address the power limitations of the current study which appeared to restrict our ability to find many significant associations among the affective control subscales and PTSD symptoms given that many of the associations approached significance ($P < .10$).

Overall, the current study highlights the critical and complex role of the processes that govern emotional experience in PTSD and its treatment. Further research that appreciates the role of multiple negative emotions in PTSD and the process of regulating them is essential. These efforts would enhance our understanding of the mechanisms contributing to the development and maintenance of PTSD and would contribute to ongoing efforts to successfully treat the affective components of PTSD.

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